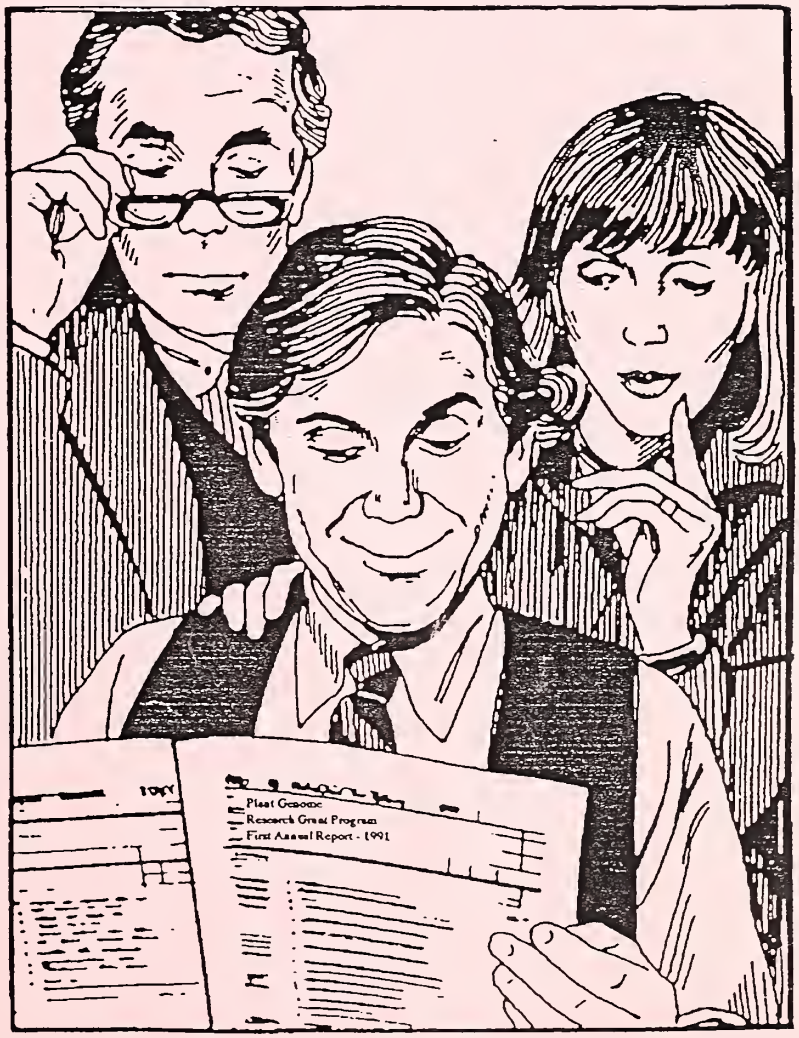
Plant Genome Research Grant Program First Annual Report - 1991



Competitive Edge

Plant Genome Research Grant Program First Annual Report - 1991

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USDA's 1992 Plant Genome Grants Program is well underway. Proposals submitted are now in the review process. The following is a summary of the 1991 program results.

The Plant Systems Division of the National Research Initiative Competitive Grants Program (NRICGP) in USDA's Cooperative State Research Service administers the plant genome grants. In 1991, the bulk of plant genome funds went to support awards made in two programs in the Plant Systems Division: The Plant Genome Program and the Plant Genetic Mechanisms and Molecular Biology Program. Plant genome funds also supported some awards in the Division's remaining five programs. While the projects that were funded cover a diversity of topics, all are directed toward advancing the understanding of plant genetic structure and mechanisms.

In all, 1991 plant genome funds — totalling $10.5 million — currently support 77 research projects. The funds also have supported one conference. Over 250 applicants competed for the grants. A list of awardees and their research topics is included in this issue.

Nearly 90 percent of the awards were for projects on the agronomic crop species. Table 1 provides a breakdown by plant species, and depicts the number of individual awards, total money awarded, and percentage of the total.

Figure 1

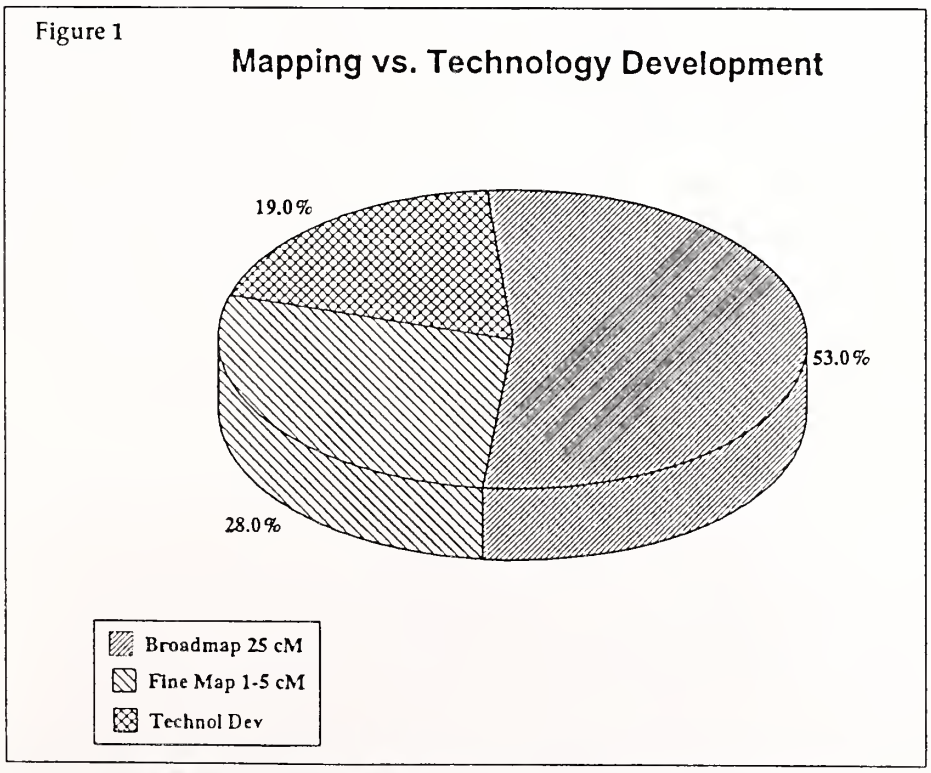

Table 1

Species, Number of Grants, and Funding Level

Species	Number of Grants	Grant Amount	Percentage of Grant Total
Corn	21	$ 2,642,000	25
Tomato	13	2,387,000	23
Bean	4	270,000	3
Cotton	2	260,000	2
Soybean	3	306,000	3
Wheat	2	176,000	2
Sorghum	1	210,000	2
Barley	1	120,000	1
Alfalfa	3	437,151	4
Pea	2	325,000	3
Cabbage	1	180,000	2
Potatoe	1	180,000	2
Rice	1	60,000	1
Pepper	1	260,000	2
Brassica	4	318,374	3
Lettuce	1	265,000	3
Poplar	2	250,000	2
Flax	1	150,000	1
Cuphea	1	210,000	2
Carrot	1	118,000	1
Tobacco	2	275,000	3
Pine	3	260,000	2
Chlaymodomonas	1	185,000	2
Arabidopsis	7	885,000	8
Cyanophora	1	150,000	1
Total	76	$ 10,489,525	104

Note: The total number of grants is 76. The total dollar amount is $10,498,525. The difference between the total values is due to more than one species reported per grant. Average per grant is $138,020.

Of the plant genome awards, 64 percent were unidisciplinary projects while 36 percent were multidisciplinary. Overall for NRICGP, multidisciplinary awards averaged 28 percent of the total. Mission-linked grants accounted for 26 percent of the total 1991 program.

Figure 1 shows the plant genome grants breakdown for mapping and technology development. Broad- or low- resolution mapping for the less well defined species accounted for 53 percent of the 1991 awards.

In terms of gene systems or traits, 76 NRI grants were given in the following areas: Insect resistance, nematode resistance, disease resistance, yield (QTL's), ripening, floral traits, triacylglycerols, and technology development. ◆

Grant recipients ☞

Marcus Rhoades Memorial Fund

Marcus Rhodes, one of the world's distinguished maize geneticists, died December 30, 1991. A fund in Rhoades' memory has been set up at Indiana University to financially assist graduate students there. Individuals who would like to make a donation in Rhoades' memory of can send a check to Tom Blumenthal, Chairman, Department of Biology, Indiana University, Bloomington, IN 47405. Please make the check payable to the I.U. Foundation - Marcus Rhoades Memorial Fund.

The Class of 1991 Plant Genome Grant Recipients

Jane Aldrich
Case Western Reserve University
Isolation of Rust Resistance Genes in Flax

David Altman
USDA/ARS Southern Crops Research Laboratory
Glanding-Control Genes of Cotton: A Model System for Gene Expression

Frederick Ausubel
Massachusetts General Hospital
Use of Genomic Substraction for Cloning Plant Genes

Barbara Baker
USDA/ARS Plant Gene Expression Center
Ac and Ds Transposon-Based Genetic Tools for Tomato

Jeffrey Bennetzen
Purdue University
Molecular Genetic Analysis of Rpl-Mediated Disease Resistance in Maize

Jeffrey Bennetzen
Purdue University
Parallel Studies of Genome Organization in Maize and Sorghum

Edwin Bingham
University of Wisconsin - Madison
Defining Gene Action for Yield in Autotetraploid Alfalfa

James Birchler
University of Missouri-Columbia
Chromosomal Manipulation in Maize

David Bisaro
Ohio State University
Molecular Mechanisms of Geminivirus Replication

Lawrence Bogorad
Harvard University
Functional Features of the Chloroplast Genome

Hans Bohnert
University of Arizona
The Cyanelle Genome - An Evolutionary Legacy of Plant Genes

Harvey Bradshaw
University of Washington
Low-Density Genetic Mapping in Populus Genome

Roxanne Broadway
Cornell University
Defensive Efficacy and Molecular Characterization of Cabbage Trypsin Inhibitor

Gordon Cannon
University of Southern Mississippi
Biochemical Characterization of Soybean Chloroplast DNA Replication in Vitro

John Carman
Utah State University
Embryogenic Tissue Cultures of Wheat: Production, Transformation and Regeneration

Christine Chase
University of Florida
Molecular Genetics of Fertility Restoration in CMS

Joanne Chory
The Salk Institute for Biological Studies
Molecular and Genetic Analysis of Arabidopsis DET2 Gene

Prem Chourey
University of Florida
Analysis of Minature and the Two Sucrose Synthase Genes in Maize

Gary Churchill
Cornell University
Converting RFLP Linkage Maps into Physical Maps: Theory and an Application

Probe

Michael Devey
USDA Forest Service
RAPD Linkage with a Major Gene for Blister Rust Resistance in Sugar Pine

Rebecca Dickstein
Drexel University
Nodule Morphogensis Genes of Medicago

Robert Ferl
University of Florida
Chromatin Structure and Gene Expression in Plants

Bikram Gill
Kansas State University
Molecular Cytogenetic Analysis in Wheat

Wilhelm Gruissem
University of California - Berkeley
Regulation of Tomato Fruit Development and Differentiation by HMG CoA Reductase

Tim Helentjaris
University of Arizona
High Density Genetic Map for Maize Including Molecular and Phenotypic Loci

Thomas Hodges
Purdue University
Homologous Recombination Between DNA Molecules in Plant Cells

Margaret Hoey
University of Georgia
A Complete Genetic Map for Liriodendron (Yellow Poplar)

Stephen Howell
Boyce Thompson Institute for Plant Research, Inc.
Isolation of Genes Involved in Cytokinin Responses in Arabidopsis

Anthony Huang
University of California - Riverside
Molecular and Cell Biology of Oil Bodies in Maize and Brassica

Keith Hutchison
University of Maine
A Molecular Genetic Linkage Map for Conifers

Noel Keen
University of California - Riverside
Cloning and Mapping of Soybean Genes for Disease Resistance and Other Characters

Jerry Kermicle
University of Wisconsin - Madison
Transposition of Ac/Ds Mobile Elements in Maize

Steven Knapp
Oregon State University
A Genetic Map of Cuphea: Fatty Acid Synthesis Loci and Transposable Elements

Molly Kyle
Cornell University
Genomic Mapping and the Transfer of Broad Spectrum Plant Virus Resistance

Christopher Lamb
Salk Institute for Biological Studies
Gene Activation Mechanisms in the Initiation of Plant Defense Responses

Brian Larkins
University of Arizona
Third International Congress of Plant Molecular Biology

Robert Martienssen
Cold Spring Harbor Laboratory
Molecular Analysis of the Iojap Gene in Maize

Douglas Maxwell
University of Wisconsin - Madison
Trans-Dominant Interference as a Mechanism for Resistance to Plant Geminiviruses

Stephan Mayfield
Research Institute of Scripps Clinic
Nuclear and Chloroplast Gene Interactions Regulating Expression of Photosystem II Proteins

Donald McCarty
University of Florida
Viviparous-1 Mediated Repression of Alpha Amylase Genes in Maize Aleurone

Shiela McCormick
USDA/ARS/PWA
Constructing and Characterizing a Tomato YAC Library to Clone Male Sterile Genes

Thomas McCoy
Montana State University
Use of Molecular Markers to Study Recombination and Heterosis in Alfalfa

Richard Michelmore
University of California - Davis
A Genetic Map of *Lactuca sativa* with Sequence Characterized Amplified Regions

Michael Mulligan
University of California - Irvine
RNA Editing in Maize Mitochondria

Martha Mutschler
Cornell University
Genomic Regions Associated with Acylsugar Biosynthesis and Insect Resistance

June Nasrallah
Cornell University
Molecular Analysis of the Cellular Interactions of Incompatibility in Brassica

Myron Neuffer
University of Missouri
Selection Characterization and Preservation of Maize Mutants

Brent Nielsen
Auburn University
Localization and Characterization of Chloroplast DNA Replication Origins

Suzanne Nielsen
Purdue University
Molecular Cloning of Soybean Cysteine Proteinase Inhibitors for Insect Resistance

Mary O'Connell
New Mexico State University
A Mitochondrial Mutation in Tomato Alters Vegetative and Reproductive Growth

Thomas Osborn
University of Wisconsin - Madison
Cytoplasmic Effects on Genome Stabilization in Brassica amphidiploids

David Ow
USDA/ARS
Generating Site-Specific Chromosomal Deletions and the Cloning of Deletions Loci

Andrew Peterson
Texas A&M University
Molecular Mapping of the Cotton Genome Using DNA Markers

Peter Peterson
Iowa State University
Transposon Tagging of Agriculturally Important Disease-Resistant Genes in Maize

Ronald Phillips
University of Minnesota
Molecular and Genetic Analysis of Tissue Culture-Induced Variation

Robert Plaisted
Cornell University
Potato RFLP Map to Introgress Insect Resistance From Wild Species

Charles Rick
University of California - Davis
Analysis of the Tomato Genome via Lycopersicon x Solanum Hybrids

Donald Robertson
Iowa State University
Isolation of Genes for Quantitative Inheritance in Maize

Ronald Sederoff
North Carolina State University
Molecular Markers to Accelerate Breeding in Loblolly Pine

Phillip Simon
USDA/ARS/Midwest Area
Molecular Markers for a Low-Resolution Genetic Map of Carrot

Karambir Singh
University of California - Los Angeles
Analysis of OCS-Element Enhancer Sequences in Arabidopsis

James Smith
Texas A&M University
Development of Molecular Probes to Augment Breeding for Quality Protein Maize

Shauna Somerville
Michigan State University
Identificaiton of Molecular Markers Adjacent to the M1-a Locus in Barley

David Speiser
USDA/ARS/Plant Gene Expression Center
Characterization of Genes for Phytochelatin Biosynthesis in *Brassica juncea*

Steven Spiker
North Carolina State University
Plant Nuclear Scaffolds: Structural and Functional Analysis

Robert Spreitzer
University of Nebraska
Chloroplast Heteroplasmic Suppression

John Steffens
Cornell University
Function and Expression of Polyphenol Oxidase

David Stern
Boyce Thompson Institute for Plant Research, Inc.
***In vitro* Analysis of Plant Mitochondrial Transcription**

Donald Strauss
Brandeis University
Use of Genomic Substraction for Cloning Plant Genes

Thomas Sullivan
University of Wisconsin - Madison
Molecular and Biochemical Analysis of the Maize Brittle-1 Gene

Steven Tanksley
Cornell University
Development of Map-Based Cloning in Crop Plants: Tomato as a Model System

Norman Weedson
Cornell University
Mapping, Host Genes Affecting Plant-Microbe Interactions in Temperate Legumes

Valerie Williamson
University of California - Davis
Molecular Characterization of the Nematode Resistance Locus of Tomato

Rod Wing
Texas A&M University
Development of Map-Based Cloning in Crop Plants: Tomato as a Model System

Ray Wu
Cornell University
Isolation of Chromosome-Sized DNA and Construction of a Physical Map

Gracia Zabala
University of Illinois
Characterization of Cytoplasmic Reversion & Nuclear Restoration in Maize ◆